

PS: 67-1996

ICS: 65.080

PAKISTAN STANDARD SPECIFICATION

FOR

**SINGLE SUPER PHOSPHATE
(2ND REVISION)**



**PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY,
STANDARDS DEVELOPMENT CENTRE,
Plot No. ST-7A, Block-3, Scheme 36, Gulistan-e- Johar
Karachi.**

**PAKISTAN STANDARD SPECIFICATION FOR
SINGLE SUPER PHOSPHATE
(2ND REVISION)**

0. FOREWARD

- 0.1 This Pakistan Standard (2nd Revision) was adopted by Pakistan Standards Institution on 11 March 1996 after the draft finalized by the Fertilizer and Allied Products Technical Committee had been approved by the National Standard Committee of Chemical.
- 0.2 This standard was first published in 1978. Ever since fertilizer Industry has undergone considerable change and in view of this, technical committee after due consideration decided to revise and make it practical for fertilizer Industry.
- 0.3 While preparing this standard the Technical Committee responsible for the preparation of this standard gave due consideration to the views of the producers, consumers and technologists, and felt that it should be related to the prevailing trade and manufacturing practices followed in this field in the country.
- 0.4 For the purpose of deciding whether a particular requirement of this standard complies with the final value, observed or calculated, expressing the result of test or analysis shall be rounded off in accordance with PS.103-1991-Method of Rounding off Numerical Value- IS + Rev number of places retained in the rounded off value should be the same as those of the specified value in the standard.
- 0.5 This standard is intended chiefly to cover the technical provisions relating to the supply of the material and it does not include all the necessary provisions of a contract.
- 0.6 In order to keep abreast with the progress of trade and industry, Pakistan Standards are revised periodically. Suggestions from the members a welcomed and shall be placed before the Committee for consideration at the time of revision.

1. Scope

- 1.1 This Standard covers single super Phosphate for use as Fertilizer.

2. SAMPLING

- 2.1 Representative sample of the material shall be drawn as prescribed in Appendix-A.

3. GRADES

- 3.1 There shall be two grades:
- i) Grade-I (powder or granulated).
 - ii) Grade-II (powder or granulated).

4 REQUIREMENTS

4.1 Powder SSP shall be free from excessive lumps while granulated SSP shall comply with particle size requirements given in Table-I.

4.2 The material shall comply with the requirements given in Table-I.

TABLE - I
REQUIREMENTS OF SINGLE SUPERPHOSPHATE

S.#	Characteristics	Requirements		Test Methods
		Grade-I	Grade-II	
1	2	3	4	5
a	Free moisture content, percent by weight, max	10	10	B-3
b	Free phosphoric acid calculated as P205 percent by weight, max	5	5	B-4
c	Water soluble phosphates calculated as P205 percent by weight, min	17.5	16	B-5
d	Available Phosphate calculated as P205 percent by weight, min	19	18	B-6
e	Particle Size for granulated fertilizer	90% 1-5 mm	90% 1-5 mm	B-8
N.B Requirements of 2,3 and 4 are calculated on dry basis				

PACKING AND MARKING

5.1 Packing: - The material shall be packed in synthetic/natural fiber bags lined with suitable plastic material or in such other suitable container as agreed to between the purchaser and the vendor. The weight of the material in bag should ordinarily be 50 kg.

5.2 Marking: - The container shall be securely closed and marked with the following information. :-

- (a) Name of the material.
- (b) Minimum available phosphate (P205) content of the material.
- (c) Name of the manufacturer.
- (d) Weight of the material in Kg. in the container.
- (e) Recognized trade mark, if any.

APPENDIX-A
SAMPLING OF SINGLE SUPER PHOSPHATE (FERTILIZER)

A.1 GENERAL REQUIREMENTS OF SAMPLING

- A.1.1 In drawing, preparing, storing and handling test sample(s), following precautions and directions shall be observed:
- A.1.2 Sample(s) shall be taken at a place protected from damp air dust and soot.
- A.1.3 The sampling instruments shall be clean and dry when used.
- A.1.4 Precautions shall be taken to protect the sample(s), the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.
- A.1.5 To draw representative sample(s), the contents of each container selected for sampling shall be mixed as thoroughly as possible by suitable means.
- A.1.6 The sample(s) shall be placed in clean, dry and air-tight glass or other suitable container on which the material has no action.
- A.1.7 The sample(s) containers shall be of such a size that they are almost completely filled by the sample.
- A.1.8 Each sample container shall be sealed tight after filling and marked with full details of sampling, year of manufacture, and other important particulars of the consignment(s).
- A.1.9 Samples shall be stored in a cool and dry place.

A.2 SCALE OF SAMPLING

- A.2.1 Lot: All the containers in a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in such batch shall constitute separate lots. In the case of consignments drawn from a continuous process, 2,000 containers or 100 metric tones of the Material shall constitute a lot.
- A.2.2 The number of containers to be chosen from a lot shall depend on size of the lot and shall be in accordance with Col. 1 and 2 of Table – II

TABLE-II
NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

Lot Size N		No of Containers to be selected n
Up to	100 containers	5
101 to	300	6
301 to	500	7
501 to	800	8
801 to	1300	9
	1301 and above	10

- A.2.3 These containers shall *be* chosen *at random* from the lot and in order to ensure randomness of selection, following procedure may be adopted:
- A.2.3.1 Arrange all the containers in the lot in a systematic manner and starting from any container, count them, 1, 2, 3 etc up to r and so on being equal to the integral part of N/n . Every rth container thus counted shall be withdrawn and all such containers shall constitute the sample.

A.3 TEST SAMPLE AND REFEREE SAMPLE

A.3.1 Draw with an appropriate sampling instrument small portion of the material from different parts of the containers selected. The total quantity taken out from each container being sufficient to conduct the tests for all characteristics given in Table-I.

A.3.2 Mix thoroughly all portions of the material drawn from the same containers to form an individual test sample. Equal quantities from all individual test samples so formed shall be mixed together to form a composite tests sample.

A.3.3 All the individual test samples and the composite test sample shall be divided into three equal parts thus forming three sets of these samples. These parts shall be immediately transferred in the thoroughly dried sample containers which shall then be sealed airtight with glass stopper. These shall be labeled with all the particulars of sampling given under A.1.7. One of these sets of test samples shall be sent o the purchaser and another to the vendor

A.3.4 Referee sample (s). The third set of test sample, bearing the seals of the purchaser and the vendor, shall constitute the referee sample and shall be used in case of dispute between the purchaser and the vendor. It shall be kept at a place agreed to between the purchaser and the vendor

A.4 Number of Tests

A.4.1 Test for determination of soluble phosphates shall be conducted on each of the individual test samples

A.4.2 Tests for the remaining characteristics given in Table-I be conducted on the composite test sample.

A.5 Criterion for Conformity

A.5.1 The test results for soluble phosphates shall be recorded as shown in Table-III. The mean of the range of tests results shall be calculated as follow

$$\text{Mean (x)} = \frac{\text{The sum of the test results}}{\text{Number of test results}}$$

Range = the difference between the maximum and the minimum values of the test results.

A.5.1.1 The appropriate expression as shown in Col. 6 of Table-III shall be calculated for this characteristic. If the condition given in Col.6 of Table III is satisfied the lot shall be declared to have satisfied the requirement for this characteristic.

A.5.2 A lot shall be declared as conforming to the specification only when it has satisfied each of the requirements specified in table I.

**TABLE III
CRITERION FOR CONFORMITY**

S.#	Characteristics	Test Results	Mean	Range	Criterion for Conformity
1	2	3	4	5	6
a	Soluble phosphate		X	R	x-0.6 r equal or greater than the value specified in Table –I(3)

APPENDIX B

Analysis of Superphosphate

B.1 Quality of Reagents

Unless specified otherwise, pure chemical and water (see PS 593:1966 specification for water Distilled Quality) shall be used in tests.

Note: Pure Chemicals shall means chemicals that do not contain impurities which affect the results of analysis.

B.2 Place composite sample in an air tight container and deliver sample to laboratory. Composite sample is reduced by using riffle to an amount sufficient for analysis. Sieve through PS: Sieve 18 aperture 1 mm (see Pakistan Standard Specification for test sieve PS: 392 1964) breaking lumps/granules. Grind in a mortar the part remaining on the sieve until all particles pass through. Mix thoroughly, transfer immediately to a wide mouthed bottle and preserve this prepared sample for analysis.

B.3 Determination of Moisture

B.3.1 Oven Method

B.3.1.1 Apparatus:

Tared weighing dish for 20 gm of prepared sample. Air Oven: heated electrically with temperature control system.

Mortar; made of porcelain or glass, size 102 mm (4 inch) in diameter.

Desiccator having silica gel as desiccating agent.

Analytical balance

B.3.1.2 Procedure:

Preparation of sample: Place about 20 grams of sample in a mortar & grind. Quickly Particle size required is less than 1 mm. Weigh 5 grams of the ground sample into a weighing dish using an analytical balance.

B.3.1.3 Determination: Place the weighing bottle containing the sample in their oven maintained at 100 ± 5 °C. After 4 hours take the sample bottle out, and cool in a desiccator for 15-20 minutes. Reweigh the sample using an analytical balance.

B.3.1.4 Calculation

$$\text{Moisture percentage} = \frac{(A-B) \times 100}{A}$$

Where

A = Weight in grams before heating

B = Weight in grams after heating.

B.3.2 Karl Fischer Method (Alternate Method)

B.3.2.1 Scope Titrimetric determination of 0.3-30 mg water by Karl Fischer Reagent.

B.3.2.2 Principle Water is extracted from the sample and titrated with Karl Fischer Reagent.

B.3.2.3 Reagents

1. Karl Fischer Reagent (Stabilized Grade) water equivalent approx. 2.5 mg H₂O/ml.
Keep the reagent in a brown bottle. Water equivalent may be determined at least once day. 2.1, 4 dioxane

B.3.2.4 SAMPLE Analysis is performed on the prepared sample.

B.3.2.5 Apparatus

1. Potentiometer Titrator: equipped with magnetic stirrer and auto control.
2. Automatic pipette, 100 ml
3. Magnetic Stirrer

B.3.2.6 Standardization of Karl Fischer Reagent

Karl Fisher Reagent is standardized with sodium tartarate. Transfer 20 ml of 1, 4 Dioxane to the dry titration vessel. Neutralize 1, 4 Dioxane with Karl Fisher reagent, to end point, as per instruction of manufacturer of apparatus.

Introduce 160 mg of sodium tartarate (Na₂ C₄ H₄ O₆ · 2H₂ O) into the titration vessel, containing neutralized 1, 4 dioxane. Titrate against Karl Fisher reagent to end point (consumption V_o ml).

Calculations of Water Equivalent (T)

Where

$$T = \frac{15.66 \times A}{100 \times V_o}$$

T = Water in mg, equivalent to 1 ml of Karl Fisher Reagent.

A = amount of Sodium Tartarate dehydrate in mg

V_o = ml of Karl Fischer solution, consumed in standardization.

B.3.2.7 Procedure

1. Dry 125 ml Erlenmeyer flask by heating at 120 oC for one hour. Allow the flask to cool in a desiccator. Transfer 2.5 gms of sample to the flask. Add 50 ml of 1,4 dioxane. Place a dry PTFE magnetic stirring rod in the flask and immediately stopper the flask. Start the stirrer motor and stir until the sample has completely disintegrated (Usually about ½ hr stirring is required). Allow the non-dissolved material to settle. (Usually ½ hr is sufficient). Transfer 20 ml of clear sample dioxin solution to the dried titration vessel. Titrate against Karl Fischer reagent to the end point following the instructions of the manufacturer of the apparatus (Consumption V ml). Also run a blank with 20 ml of 1, 4 dioxane (Consumption V ml).

2. Calculation

B.3.2.7 Procedure

1. Dry 125 ml Erlenmeyer flask by heating at 120 oC for one hour. Allow the flask to cool in a desiccator. Transfer 2.5 gms of sample to the flask. Add 50 ml of 1, 4 dioxane. Place a dry PTFE magnetic stirring rod in the flask and immediately stopper the flask. Start the stirrer motor and stir until the sample has completely disintegrated (usually about ½ hr stirring is required). Allow the non-dissolved material to settle. (Usually ½ hr is sufficient). Transfer 20 ml of clear sample dioxin solution to the dried titration vessel. Titrate against karl Fishcher reagent to the end point following the instruction sof the manufacturer of the apparatus (Consumption V ml). Also run a blank with 20 ml of 1, 4 dioxane (Consumption V ml).

2. Calculation

Calculate water content of the sample as under:

$$\text{Moisture (\%)} = \frac{(V_2 - V_1) \times T}{10}$$

Where:-

V_1 = ml Karl Fischer Reagent consumed in blank run

V_2 = ml. Karl Fischer Reagent consumed in sample run

T = Water in mg; equivalent to 1 ml of Karl Fischer Reagent.

B.4 Determination of Free phosphoric Acid

B.4.1 Reagents

1. Acetone- conforming to PS: 642-1968
2. Standard Sodium Hydroxide Solution 0.1 N
3. bromocresol – Green Indicator Solution: Dissolve 0.1 g of bromocresol green in 100 ml of rectified spirit.

B.4.2 Procedure

1. Weigh accurately about 2.5 g of the prepared sample and transfer to a soxhlet extractor. Add 100 ml of acetone and extract for three hours cool and distill off the acetone as far as possible. Take up the residue with water and made up the volume to 250 ml. Pipette out exactly 100 ml of this solution and titrate with standard sodium hydroxide solution, using bromocresol green as indicator until the colour just changes from yellow to blue.

2. Calculation

Free phosphoric acid (P2 O5) percent by weight

$$= \frac{1.775 \times V}{W}$$

Where:-

V = volume in ml of standard sodium hydroxide solution used

W = weight in gm of the prepared sample taken for the test

B.5 Determination of water – soluble phosphate

B.5.1 Reagents

1. Concentrated Nitric Acid conforming to PS 34: 1958
2. Quinoline molybdate reagent: - Prepare the reagent with following solutions:-

Sol. A Dissolve 120 gm Ammonium Molybdate completely with continuous heating and shaking in 300 ml water. Allow the solution to cool.

Sol. B Dissolve 120 gm Citric Acid in 200 ml water and add 170 ml Nitric Acid in 1 liter measuring flask.

Sol. C Mix 70 ml Nitric Acid with 10 ml Quinoline.

Slowly add sol A to sol B shaking vigorously. Then add Sol. C and make up the volume to 1 liter and mix Stopper the flask and allow to stand the solution in dark for 2 days. Filter the solution and use filtrate.

B.5.2 Procedure

B.5.2.1 Transfer 5 gm prepared sample (B.2) into 500 ml measuring flask. Add 450 ml water and shake for ½ hour. Make up to the mark, mix and filter. Preserve the filter paper and residue for test as given in B.6.3 or b.7.6 omitting digestion.

B.5.2.2 Pipette out accurately 10 ml of the filtrate from B.5.2.1 in a 250 ml beaker, add 15 ml Nitric Acid and dilute with water to 100 ml. heat to boiling and if necessary, boil for five minutes to convert all phosphate to orthophosphate. Remove the beaker from heater and add 40 ml Quinoline-molybdate solution with continuous shaking. Cool to room temperature and filter through dried, weighed IG4 sintered/glass filter crucible (pore dia 5-15 micron). Wash the precipitate with cold water. Dry the crucible at 25 °C for exactly 15 minutes, cool in desiccators and weigh. Perform a blank test also if necessary.

B.5.3 Calculation

$$\% \text{ water soluble } P_2O_5 = 0.03207 \times (W_2 - W_1)$$

Where:-

W_1 = weight of dry and clean crucible in mg.

W_2 = weight of crucible with precipitate in mg

6. Determination of Available Phosphate soluble in natural Ammonium Citrate solution

B.6.1 Method

The method consist in first determining the total phosphates (as P_2O_5) and then deducting from this the neutral ammonium citrate insoluble phosphates (as p_2O_5) in the water insoluble residue.

B.6.2 Reagents

1. Concentrated Hydrochloric Acid Conforming to PS 37-1961
2. Concentrated Nitric Acid- conforming to PS: 34-1958
3. Dilute Nitric Acid -1: 2 and 1: 10 (v/v)
4. Neutral ammonium citrate solution-Dissolve 370 gm of crystalline citric acid in 1,500 ml of water and neutralize with 345 ml of concentrated ammonium hydroxide (sp-gr 0.92) cool and adjust the pH of the solution up to 7.0. The pH may be determined electrometrically with glass or hydrogen electrodes. After the adjustment of pH to 7.0, dilute if necessary, with water to sp gr 1.09 at 20 c. The solution may be preserved in Stoppard bottle but the pH should be checked frequently.
5. Dilute Hydrochloric Acid-1: 1 (v/v)
6. Concentrated hydrochloric acid

B.6.3 Procedure

1. For total phosphates-Digest 5 gm of the prepared sample, accurately weighed, with concentrated hydrochloric acid and evaporate to dryness. Add about 5 ml of concentrated nitric acid and again evaporate to dryness. Again add 5 ml of concentrated nitric acid and evaporate to dryness. Dissolve the residue in dilute nitric acid (1:2) warm for 10 to 15 minutes and then cool. Filter through a filter paper (Whatman No 40 or its equivalent) into a volumetric flask (500 or 1000 ml). Wash 3 or 4 times with dilute nitric acid (1: 10) and then with water. Make up the volume to mark. Determine the total phosphates (as P₂O₅) in suitable aliquot as under B.5.2.2 and B.5.3
2. For citrate insoluble phosphates in water insoluble Residue; transfer the residue and the filter paper as preserved under B.5.2.2 within one hour to a 250 ml. conical flask containing 100 ml of neutral ammonium citrate solution, previously heated to 65 C. Stopper the flask to maintain the temperature at 65 °C. kept the stopper loose to prevent development of pressure and evaporation loss. Shake vigorously for about 30 minutes at every 5 minutes interval, keeping the flask at 65 C. After exact one hour from the time of putting in the filter paper and the material in the flask transfer the contents quantitatively over a Buchner funnel fitted with suction. Wash the flask and buchner funnel with small portions 925 to 30 ml) of water heated to 65 C, allowing the contents over the funnel to drain out completely each time. Continue washing under suction till the washings come to 250-300 ml. Transfer the paper with the residue in a platinum dish or silica crucible, dry in air-oven, ignite under a low flame and ash completely. Transfer the ash completely in 250 ml beaker with dilute hydrochloric acid (1:1). Digest over a steam bath and then evaporate to dryness. Add 10 to 15 ml of concentrated nitric acid and evaporate to dryness. Repeat the evaporation with concentrated nitric acid. Treat the residue with dilute nitric acid (1:2). Warm for 10 to 15 minutes and filter through a filter paper (Whatman no. 40 or its equivalent). Wash 3 to 4 times with dilute nitric acid (1:10) and then with water till the filtrate collected in a 500 ml volumetric flask comes to nearly 500 ml. Make up the volume to the mark and determine the citrate insoluble phosphates (as P₂O₅) in a suitable aliquot under B.5.2.2 or B.7.6

B.6.4 Calculation

Phosphates as (P₂ O₅) soluble in neutral ammonium citrate solution, percent by weight =
 $A - (B+C)$

Where:-

- A = total phosphates as (P₂ O₅), percent by weight (see B.7.7)
- B = Water soluble phosphate as P₂ O₅ percent by weight (see B.5.3)
- C = Citrate insoluble phosphates in water insoluble residue (as P₂ O₅), percent by weight (see B.6.3.2)

B.7 ALTERNATE METHOD FOR DETERMINATION OF TOTAL PHOSPHATE SPECTROPHOTOMETRIC METHOD

B.7.1 This standard establishes a spectrophotometric method for determination of total phosphorus in fertilizer and fertilizer materials. This method is applicable to materials normally used as fertilizers. It is not applicable to materials yielding coloured acid digests containing ions other than orthophosphate which form coloured complexes with molybdovanadate.

B.7.2 Fundamentals

By digestion in concentrated acids, phosphorus is brought into solution and converted to orthophosphate ion PO_4 . The orthophosphate ion reacts with molybdovanadate reagents to form a coloured complex with a maximum absorbance at 400nm. The absorbance of the molybdovanadophosphate complex is measured spectrophotometrically and related to the phosphate concentration.

B.7.3 Apparatus

1. Spectrophotometer with stray-light filter and method (within 0.001 A) absorption cells.
2. Volumetric flasks, 100,250,500 and 1,000 ml
3. Burette, 50 ml

B.7.4 Reagents

1. Molybdovanadate solution- Dissolve 40 grams ammonium molybdate tetrahydrate in 400 ml of hot distilled water and cool. Dissolve 2 gm ammonium metavanadate in 250 ml of hot distilled water, cool; add 400 ml of 70% perchloric acid. Gradually add molybdate solution to vanadate solution with stirring, and dilute to 2 liters with distilled water.
2. Phosphate standard stock solution, 0.1 mg P205 per ml; Dissolve 0.19175 gm of primary standard potassium dihydrogen phosphate (previously dried for 2 hours at 105 c) in distilled water and dilute to 1 liter.
3. Nitric acid, reagent grade.
4. Perchloric acid, reagent grade 70% to 72%

B.7.5 Preparation of Standard Curve

Prepare a series of standards containing 2.0, 2.5, 3.0, 3.5, 4.0 and 4.5 mg P205 by transferring from a burette 50, 25, 30, 35, 40 and 45 ml of the standard stock solution to 100 ml volumetric flask. Adjust volume in each flask to about 50 ml and, within 5 minutes, for entire series, add 20 ml of molybdovanadate solution, dilute to volume, and mix thoroughly. Let it stand for 10 minutes, set instrument to read zero absorbance with 2.0 mg standard and determine absorbance of remaining standards at 400 nm. Plot absorbance vs phosphate concentration to form standard curve.

B.7.6 Procedure

Weigh 1 gram of prepared sample (as per B.2) and place in 250 ml beaker. Add 25 ml of nitric acid and boil for 30 to 40 minutes. Cool, add 10 ml of perchloric acid, and boil gently until solution is nearly colourless and dense white fumes appear (caution: do not boil to dryness). Cool, add 50 ml of distilled water and boil for a few minutes. If sample contains less than 20% P₂O₅, filter, transfer into 250 ml volumetric flask and make up the volume with distilled water. Transfer a volumetric aliquot, containing between 2.5 and 4.0 mg of P₂O₅ to a 100 ml flask and adjust volume to about 50 ml with distilled water. Transfer a volumetric aliquot, containing between 2.5 and 4.0 mg of P₂O₅ to a 100 ml flask and adjust volume to about 50 ml with distilled water. Concurrently, prepared 2.0 and 3.5 mg P₂O₅ standards, add 20 ml of molybdovanadate to standards and sample solutions, dilute to volume with distilled water. and mix thoroughly. Determine absorbance at 400 nm of sample solutions with spectrophotometer, set to zero absorbance with 2.0 mg standard. Read the 3.5 mg standard to check previously prepared standing curve. Determine mg of P₂O₅ in sample solution by comparing with standard curve.

B.7.7 Calculations

The phosphorus content, expressed as P₂O₅ is calculated by the formula

$$P_2O_5 (\%) = \frac{C_1 \times V_1 \times 10}{C_2 \times V_2}$$

Where:-

C₁ = mg of P₂O₅ read from standard curve

V₁ = volume of sample dilutions

V₂ = volume of aliquot

C₂ = weight of sample in grammes

For official samples the determination of total phosphorus is used in conjunction with the determination of citrate insoluble phosphorus. For the calculation of available phosphorus only his determination of total phosphorus may be used for quality control in a manufacturing plant or for analysis of raw material.

B.8 Particle Size Analysis

B.8.1 Principle

Granulated fertilizer sample is screened through standard screen of known mesh. The amount of sample left on the screen is weighed.

B.8.2 Apparatus

B.8.2.1 Standard sieve with 200 mm dia, height 50 mm of mesh size 5.00 mm, 4.00 mm, 3.00 mm, 2.00 mm, 1.00 mm

B.8.2.2 Sieve shaker with 300 horizontal strokes and 160 knocks per minute.

B.8.2.3 Bottom and cover of screens

B.8.3 Sample Use original product representative sample for the analysis. If product adheres to the screen, dry it before analysis.

B.8.3 Procedure

Assemble the screens in such a way that largest mesh screen is on the top and smallest mesh on the bottom in descending order. Fit sieve bottom under the last screen.

Transfer 100 grams of sample on top sieve and fit sieve lid on the set up.

Allow the shaker to shake the set for five minutes.

Weigh the product left on each screen.

B.8.5 Calculation

Weight of product on each sieve gives directly the % retained on a particular sieve.

Not For Sale- PSQCA (c)
Only for Research Purpose

AMENDMENT No. 1-APPROVED BY NSC CHEMICAL HELD ON 26 NOVEMBER,
2014 METHOD FOR DETERMINATION OF P₂O₅ CONTENT IN SSP- PS: 67/1996


**MINUTE OF MEETING HELD IN THE OFFICE OF MR. MUHAMMAD TARIQ
NIAZI, HEAD/SR. MANAGER (R&D), NFC-IEFR, FAISALABAD**

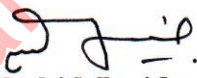
The meeting of the committee (constituted in meeting of 81st meeting of Fertilizer and allied products technical committee on 25th & 26th June-2013 at NFC-IEFR Faisalabad) met on 06-12-2013 at 11:00 am in the office of Mr. Muhammad Tariq Niazi, Head/Sr. Manager(R&D), NFC Institute of Engineering & Fertilizer research, Faisalabad. The list of members attended is annexed. The meeting started with the recitation of Holy Quran.


Mr. Khalid Mahmood, Sr. Manager (R&D), NFC-IEFR, Faisalabad and Dr. Muhammad Akram Qazi, Agriculture Chemist (SF), Lahore presented the analysis data of 30 SSP sample & for water soluble and Citrate Soluble contents at 25°C & 65 °C with 65 minute of shaking times. The result of the both Institute indicated that analysis at 65 C increase the P₂O₅ content in SSP by 0.73. It might be increase the more by increasing the analysis temperature.

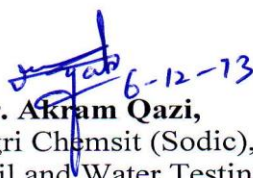
Committee unanimously agreed that analysis temperature of 65 °C is not correlated with the average soil temperature; hence there will be no addition to the plant. Committee agreed on the existing temperature i.e 25 °C. Hence the method presented by Soil fertility Research Institute is found direct and efficient as compared with already approved method of P₂O₅ determination for SSP by Pakistan Standards and Quality Control Authority, Karachi.


Committed unanimously recommend this method for approval and inclusion in Pakistan Standard for Quality Control


Mr. Muhammad Tariq Niazi,
Head/Sr. Manager (R&D)
NFC Institute of Engineering & Fertilizer
Research, Faisalabad.


Dr. Shahid Javid,
Soil Chemsit Section, Ayub Research Insitute
Faisalabad.


Mr. Khalid Mahmood,
Sr. Manager (R&D)
NFC Institute of Engineering & Fertilizer
Research,
Faisalabad.


Dr. Akram Qazi,
Agri Chemsit (Sodic),
Soil and Water Testing Laboratory, Lahore.


Mr. Muhammad Khalid Tanvir,
Agricultural Chemist (Soil Fertility),
Soil & Water Testing Lab. For research,
Ayub Agri Research Institute, Jhang Road,
Lahore.

**NAME OF PARTICPANTS ATTENDED THE MEETING HELD ON 06-12-2013,
HELD AT NFC-IEFR , FAISALABAD**

Mr. Muhammad Tariq Niazi,
Head/Sr. Manager (R&D)
NFC Institute of Engineering & Fertilizer
Research, Faisalabad.

Mr. Khalid Mahmood,
Sr. Manager (R&D)
NFC Institute of Engineering & Fertilizer Research,
Faisalabad.

Dr. Shahid Javid,
Soil Chemsit Section, Ayub Research Insitute
Faisalabad.

Dr. AkramQazi,
Agri Chemsit (Sodic),
Soil and Water Testing Laboratory, Lahore.

Mr. MuhammadKhalidTanvir,
Agricultural Chemist (Soil Fertility), Soil
& Water Testing Lab. For research,
Ayub Agri Research Institute, Jhang Road,
Lahore.

Not For Sale- PSQCA (c)
Only for Research Purpose

**MINUTE OF MEETING HELD IN THE OFFICE OF MR. MUHAMMAD TARIQ
NIAZI, HEAD/SR. MANAGER (R&D), NFC-IEFR, FAISALABAD**

The meeting of the committee (constituted in meeting of 81st meeting of Fertilizer and allied products technical committee on 25th & 26th June-2013 at NFC-IEFR Faisalabad) met on 06-12-2013 at 11:00 am in the office of Mr. Muhammad Tariq Niazi, Head/Sr. Manager(R&D), NFC

Institute of Engineering & Fertilizer research, Faisalabad. The list of members attended is annexed. The meeting started with the recitation of Holy Quran.

Mr. Khalid Mahmood, Sr. Manager (R&D), NFC-IEFR, Faisalabad and Dr. Muhammad Akram Qazi, Agriculture Chemist (SF), Lahore presented the analysis data of 30 SSP sample & for water soluble and Citrate Soluble contents at 25°C & 65 °C with 65 minute of shaking times. The result of the both Institute indicated that analysis at 65 C increase the P2O₅ content in SSP by 0.73. It might be increase the more by increasing the analysis temperature.

Committee unanimously agreed that analysis temperature of 65 °C is not correlated with the average soil temperature; hence there will be no addition to the plant. Committee agreed on the existing temperature i.e 25 °C. Hence the method presented by Soil fertility Research Institute is found direct and efficient as compared with already approved method of P2O₅ determination for SSP by Pakistan Standards and Quality Control Authority, Karachi.

Committed unanimously recommend this method for approval and inclusion in Pakistan Standard for Quality Control

Not For Sale- PSQCA (P)
Only for Research Purpose